



WORD PROBLEM EQUATIONS

LESSON 9

Connect

EXAMPLE 1:

A cell phone company offers two plans:

Plan A: 120 free minutes, \$0.75 per additional minute

Plan B: 30 free minutes, \$0.25 per additional minute:

Which time for calls will result in the same cost for both plans?

Let x represent the time three calls at same cost.

Let $(x-120)$ represent Plan A

Let $(x-30)$ represent Plan B

$0.75(x-120) = 0.25(x-30)$

$0.75x - 90 = 0.25x - 7.5$

$0.75x - 0.25x = -7.5 + 90$

$0.5x = 82.5$

$\frac{0.5x}{0.5} = \frac{82.5}{0.5}$

$x = 165$

Solution.

Things to Remember

Use a variable to represent the unknown quantity

Express any other unknown quantities in terms of this variable, if possible

Write an equation, and solve it.

State the answer to the problem

Check your answer by substituting in the problem.

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EXAMPLE 2:

Two rental halls are considered for a social gathering.

Hall A costs \$45 per person

Hall B costs \$1500, plus \$15 per person

Determine the number of people for which the halls will cost the same to rent.

Let x represent # of people at same cost

Hall A $45x$

Hall B $1500 + 15x$

$45x = 1500 + 15x$

$45x - 15x = 1500$

$30x = 1500$

$\frac{30x}{30} = \frac{1500}{30}$

$x = 50$

Solution.

Things to Remember

Use a variable to represent the unknown quantity

Express any other unknown quantities in terms of this variable, if possible

Write an equation, and solve it.

State the answer to the problem

Check your answer by substituting in the problem.

Practice

YOU TRY!

A sales clerk is offered two methods of payment

Plan A: \$1200 per month with a commission of 5% on his sales.

Plan B: \$1400 per month with a commission of 2.5% on his sales.

Determine the sales that result in the same total earnings from both plans.

Let x represent total sales

Plan A $1200 + 0.05x$

Plan B $1400 + 0.025x$

$1200 + 0.05x = 1400 + 0.025x$

$0.05x - 0.025x = 1400 - 1200$

$0.025x = 200$

$\frac{0.025x}{0.025} = \frac{200}{0.025}$

$x = 8000$

Things to Remember

Use a variable to represent the unknown quantity

Express any other unknown quantities in terms of this variable, if possible

Write an equation, and solve it.

State the answer to the problem

Check your answer by substituting in the problem.

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